

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claim 1 (Original): A method of compensating a pre-defined seek profile for use in a data storage device, the method comprising:

- defining an operating temperature threshold in the data storage device;
- performing one or more seek operations at each of a plurality of initial data storage device operating temperatures; and
- obtaining a seek profile compensation value for each of the plurality of initial data storage device operating temperatures sufficient to maintain the data storage device operating temperature below the operating temperature threshold.

Claim 2 (Original): The method of claim 1 further comprising:

- determining a seek profile compensation function as a function of initial data storage device operating temperature based on the seek profile compensation values obtained.

Claim 3 (Original): The method of claim 2, wherein the determining operation comprises:

- fitting the plurality of seek profile compensation values and the plurality of initial data storage device operating temperatures to a curve.

Claim 4 (Original): The method of claim 3, wherein the fitting operation comprises:

- calculating variables for use in a mathematical formula defining the curve.

Claim 5 (Currently Amended): The method of claim 2, wherein the determining operation comprises comprising:

storing the seek profile compensation values for each of the plurality of initial data storage device operating temperatures in a table; and

determining the seek profile compensation function as a linear interpolation between the seek profile compensation values for each of the plurality of initial data storage device operating temperatures in the table.

Claim 6 (Original): The method of claim 1 further comprising:

determining a first seek profile compensation value for use when the initial data storage device operating temperatures is within a first operating temperature range, the first seek profile compensation value being sufficient to maintain the data storage device operating temperature below the operating temperature threshold;

determining a second seek profile compensation value for use when the initial data storage device operating temperature is within a second operating temperature range, the second seek profile compensation value being sufficient to maintain the data storage device operating temperature below the operating temperature threshold; and

determining a seek profile compensation function to be the first seek profile compensation value when the initial data storage device operating temperature is within the first operating temperature range and the second seek profile compensation value when the operating temperature is within the second operating temperature range.

Claim 7 (Original): The method of claim 6, wherein the first operating temperature range and the second operating temperature range overlap and the determining the seek profile compensation function operation comprises:

if the initial data storage device operating temperatures is within the first operating temperature range and the second operating temperature range, determining the seek profile compensation function to be the first seek profile compensation value if the operating temperature is increasing and the second seek profile compensation value when the operating temperature is decreasing.

Claim 8 (Original): The method of claim 6 further comprising:

storing the first seek profile compensation value, the first operating temperature range, the second seek profile compensation value, and the second operating temperature range in a seek profile compensation table in the data storage device.

Claim 9 (Original): The method of claim 4 further comprising:

storing the variables calculated in the fitting operation in the data storage device.

Claim 10 (Original): The method of claim 1, wherein each seek operation includes performing seeks at a plurality of different seek lengths and the obtaining operation comprises:

compensating the pre-defined seek profile to obtain a seek profile compensation value for each of the plurality of initial data storage device operating temperatures and each of the plurality of different seek lengths sufficient to maintain the operating temperature below the operating temperature threshold.

Claim 11 (Original): The method of claim 10 further comprising:

determining a seek profile compensation function as a function of initial data storage device operating temperature and seek length based on the seek profile compensation value determined for each of the plurality of initial data storage device operating temperatures and each of the plurality of different seek lengths.

Claim 12 (Original): The method of claim 11, wherein the determining operation comprises:

fitting the plurality of seek profile compensation values, the plurality of initial data storage device operating temperatures and the plurality of different seek lengths to a curve by calculating variables for use in a mathematical formula defining the surface.

Claim 13 (Original): The method of claim 10 further comprising:

storing the seek profile compensation values for each of the plurality of initial data storage device operating temperatures and each of the different seek lengths in a table; and
determining the seek profile compensation function as the linear interpolation between the seek profile compensation values for each of the plurality of initial data storage device operating temperatures in the table and the plurality of different seek lengths.

Claim 14 (Original): The method of claim 12 further comprising:

storing the variables calculated in the fitting operation in the data storage device.

Claim 15 (Currently Amended): A method of performing a seek operation in a data storage device comprising:

determining seek profile compensation information corresponding to a plurality of initial data storage device operating temperatures sufficient to maintain the data storage device operating temperature below an operating temperature threshold;

determining a seek profile compensation value from the seek profile compensation information based on a current operating temperature;

compensating a pre-determined seek profile using the seek profile compensation value to create a temperature compensated seek profile; and

performing the seek operation using the temperature compensated seek profile.

Claim 16 (Currently Amended): The method of claim 15, wherein the seek operation has a seek length and the determining operation comprises:

determining a seek profile compensation value from seek profile compensation information based on the current operating temperature and the seek length of the seek operation.

Claim 17 (Original): The method of claim 15, wherein the determining operation comprises:
monitoring recent changes in operating temperature; and
determining a seek profile compensation value by selecting a first seek profile compensation value from a table of a plurality of seek profile compensation values and associated operating temperature ranges based on the current operating temperature and the recent changes in operating temperature.

Claim 18 (Original): The method of claim 15, wherein the compensating operation comprises:
determining a second compensation value that is not based on operating temperature;
comparing the seek profile compensation value with the second compensation value to determine which is a most compensating profile compensation value; and
compensating the pre-determined seek profile using the most compensating profile compensation value to create a temperature compensated seek profile.

Claim 19 (Original): A controller for a data storage device comprising:
a microprocessor; and
a means for compensating a pre-determined seek profile based on a current operating temperature.

Claim 20 (Original): The controller of claim 19 where in the means for compensating comprises:
a means for compensating a pre-determined seek profile based on the current operating temperature and a seek length.

Claim 21 (New): The controller of claim 19, wherein the data storage device comprises one of a magnetic disc drive, an optical disc drive, a magneto-optical disc drive, or a compact disc drive.

Claim 22 (New): A device, comprising:

a controller that determines a seek profile compensation value for each of a plurality of initial data storage device operating temperatures sufficient to maintain the data storage device operating temperature below the operating temperature threshold.

Claim 23 (New): The device of claim 22, wherein the controller compensates a pre-defined seek profile with the determined seek profile compensation values.

Claim 24 (New): The device of claim 22, wherein the controller further determines a seek profile compensation function as a function of initial data storage device operating temperature based on the seek profile compensation values obtained.

Claim 25 (New): The device of claim 22, wherein the controller further:

determines a first seek profile compensation value for use when the initial data storage device operating temperatures is within a first operating temperature range;

determines a second seek profile compensation value for use when the initial data storage device operating temperature is within a second operating temperature range; and

determines a seek profile compensation function to be the first seek profile compensation value when the initial data storage device operating temperature is within the first operating temperature range and the second seek profile compensation value when the operating temperature is within the second operating temperature range.

Claim 26 (New): The device of claim 22, wherein the controller determines a seek profile compensation value for each of the plurality of initial data storage device operating temperatures and each of a plurality of different seek lengths sufficient to maintain the operating temperature below the operating temperature threshold.

Claim 27 (New): The device of claim 22, wherein the data storage device comprises one of a magnetic disc drive, an optical disc drive, a magneto-optical disc drive, or a compact disc drive.